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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,096	11/26/2003	John E. Kendall	62806A (1062-023)	1111
25215	7590	01/11/2006	EXAMINER	
DOBRUSIN & THENNISCH PC 29 W LAWRENCE ST SUITE 210 PONTIAC, MI 48342			AN, SANG WOOK	
			ART UNIT	PAPER NUMBER
			1732	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/723,096

Applicant(s)

KENDALL ET AL.

Examiner

Sang W. An

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/13/05 &amp; 6/9/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

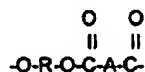
A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 1 and 5-20 is rejected under 35 U.S.C. 102(e) as being anticipated by Winckler et al (US 6420047). As to claim 1, Winckler discloses combining a macrocyclic oligoester and a reactive compound with a transesterification catalyst thereby forming a reactive admixture wherein the reactive compound is selected from another macrocyclic oligoester or a secondary compound (Col 29 Line 59); combining the reactive admixture with a linking agent and a reinforcement material to form the sheet molding compound (Col 10 Line 47); molding the sheet molding compound at an elevated temperature wherein the macrocyclic oligoester reacts with the reactive compound in the presence of the transesterification catalyst to produce a block copolymer (Column 20 Line10); the linking agent couples chains of the block copolymer together thereby increasing the molecular weight of the block copolymer (Col 26 Line 9). As to Claim 5, Winckler discloses combining a filler with the reactive admixture wherein the filler and the reinforcement material represent at least about 50% by weight of the sheet molding compound (Col 10 Line 57). As to claim 6, Winckler discloses blend material wherein the filler is calcium carbonate (Col 10 Line 48). As to claim 7, Winckler discloses composition where macrocyclic ester, the secondary compound or both are

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present in the sheet molding compound in an amount between about 1% and about 30% by weight (Col 16 Line 51). As to claim 8, Winckler discloses applying the sheet molding compound to one or more plastic films, the plastic films being at least partially formed of a polyester resin wherein, upon molding, the sheet molding compound is integrated with the one or more plastic films in the one or more parts (Col 27 Line 19). As to claim 9, Winckler discloses admixing into the molding compound, a low profile agent including a clay that is intercalated with a macrocyclic oligoester, wherein exfoliation of the clay during polymerization of the macrocyclic oligoester increases volume for offsetting shrinkage (Col 10 Line 52). Examiner notes that intercalation and exfoliation of the clay platelets in the polymer resin is inherently in Winckler's discussion of nanoclays increasing the modulus of the product. It is well known in the field of nanocomposites that adding nanoclays and exfoliating the individual clay platelets will improve the material properties of a polymer including the modulus. As to claim 10, Winckler discloses the step of molding the sheet molding compound wherein the molding step occurs in a time period selected from within 24 hours of forming the admixture or no less than 10 days after forming the admixture (Col 11 Line 60). As to claim 11, Winckler discloses a macrocyclic oligoester wherein the structural repeat unit of formula is as follows:



wherein R is an alkylene, a cycloalkylene, or a mono- or polyoxyalkylene group, and A is a divalent aromatic or alicyclic group (Col 12 Line 60). As to claim 12, Winckler

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discloses combining a macrocyclic oligoester and a secondary compound selected from a cyclic ester or a dihydroxyl-functionalized polymer with a transesterification catalyst to form a reactive admixture (Col 29 Line 59); combining the reactive admixture with a reinforcement material to form the sheet molding compound (Col 10 Line 47); applying the sheet molding compound to one or more plastic films, the plastic films being at least partially formed of a polyester resin (Col 27 Line 19); molding the sheet molding compound with the one or more plastic films at an elevated temperature to form one or more parts wherein, (a) the macrocyclic oligoester react with the secondary compound in the presence of the transesterification catalyst to produce a block copolymer of polyester and the secondary compound (Col 29 Line 59), and (b) the sheet molding compound is integrated with the one or more plastic films in the one or more pads (Col 27 Line 21). As to claim 13, Winckler discloses admixing into the molding compound, a low profile agent including a clay that is intercalated with a macrocyclic oligoester, wherein exfoliation of the clay during polymerization of the macrocyclic oligoester increases volume for offsetting shrinkage (Col 10 Line 52). Examiner notes that intercalation and exfoliation of the clay platelets in the polymer resin is inherently in Winckler's discussion of nanoclays increasing the modulus of the product. It is well known in the field of nanocomposites that adding nanoclays and exfoliating the individual clay platelets will improve the material properties of a polymer including the modulus. As to claim 14, Winckler discloses the step of molding the sheet molding compound wherein the molding step occurs in a time period selected from within 24 hours of forming the admixture or no less than 10 days after forming the admixture (Col

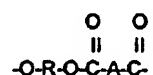
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11 Line 60). As to claim 15, Winckler discloses the steps of combining the admixture with the reinforcement material and applying the sheet molding compound to the one or more plastic films occur at least partially simultaneously (Col 32 Line 55). As to claim 16, Winckler discloses forming a low-shrinkage molding compound into one or more parts, comprising providing a molding compound that includes at least one of a macrocyclic oligoester and a secondary compound selected from a cyclic ester or a dihydroxyl-functionalized polymer with a transesterification catalyst to form a reactive admixture (Col 29 Line 59), and admixing into the molding compound, a low profile agent including a clay that is intercalated with a macrocyclic oligoester', wherein exfoliation of the clay during polymerization of the macrocyclic oligoester increases volume for offsetting shrinkage (Col 10 Line 52). Examiner again notes that intercalation and exfoliation of the clay platelets in the polymer resin is common knowledge in the field of nanocomposites. As to claim 17, Winckler discloses molding the sheet molding compound to form one or more parts wherein the step of molding the sheet molding compound occurs in a time period selected from within 24 hours of forming the admixture or no less than 10 days after admixing the low profile agent into the molding compound (Col 11 Line 60). As to claim 18, Winckler discloses forming a sheet molding compound into one or more

3. parts, comprising: combining a macrocyclic oligoester and a secondary compound selected from a cyclic ester or a dihydroxyl-functionalized polymer with a transesterification catalyst to form a reactive admixture (Col 29 Line 59), combining a reinforcement material with the admixture to form the sheet molding compound (Col 10

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Line 47), molding the sheet molding compound at an elevated temperature to form one or more parts wherein; (a) the macrocyclic oligoester reacts with the secondary compound in the presence of the transesterification catalyst to produce a block copolymer of polyester and the secondary compound (Col 10 Line 47), and (b) the step of molding the sheet molding compound occurs in a time period selected from within 24 hours of forming the admixture or no less than 10 days after forming the admixture (Col 11 Line 60). As to claim 19, Winckler discloses a macrocyclic oligoester wherein the structural repeat unit of formula is as follows:



wherein R is an alkylene, a cycloalkylene, or a mono- or polyoxyalkylene group, and A is a divalent aromatic or alicyclic group (Col 12 Line 60). As to claim 20, Winckler discloses combining a macrocyclic oligoester and a secondary compound selected from a cyclic ester or a dihydroxyl-functionalized polymer with a transesterification catalyst to form a reactive admixture (Col 29 Line 59), combining the reactive admixture with a reinforcement material to form the sheet molding compound wherein the reactive admixture is combined with the reinforcement material (Col 10 Line 47) according to a technique selected from; (a) applying the reinforcement material to one or more plastic films; coating the one or more films and the reinforcement material with a supplemental reactive admixture in liquid form; and applying the reactive admixture to the one or more films; (b) applying the reactive admixture to the one or more plastic films, applying the reinforcement material to the admixture', and coating the reactive admixture and the

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reinforcement material with a supplemental reactive admixture in liquid form; or (c) a combination thereof (Col 32 Line 54), and molding the sheet molding compound with the one or more plastic films at an elevated temperature to form one or more parts (Col 32 Line 56) wherein; the macrocyclic oligoester react with the secondary compound in the presence of the transesterification catalyst to produce a block copolymer of polyester and the secondary compound (Col 29 Line 59).

### Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Winckler in view Gallucci et al (US 5596049). Winckler teaches everything previously mentioned above in the 102(e) rejection. Winckler, however, does not teach using linking agent selected from a diepoxy resin, a diepoxide, a diisocyanate, a diester or a combination thereof. Nevertheless, Gallucci teaches reinforcing polyesters with diepoxy (Col 9 Line



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24). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use Gallucci's teaching of reinforcing polyesters with diepoxy in Winckler's molding compound in order exhibit vastly superior melt viscosity and tensile elongation properties (Col 9 Line 25).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Winckler in view of Ladang et al (US 2002/0153633). Winckler teaches everything previously mentioned above in the 102(e) rejection. Winckler, however, does not teach end-capped saturated polyester selected from a polycaprolactone terminated by a phenyl isocyanate and a diethylene glycol adipate polyol terminated by phenyl isocyanate for assisting in maintaining greater dimensional stability. Nevertheless, Ladang teaches terminating polycaprolactone by phenyl isocyanate (Pg 7 Claim 8). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use Ladang's teaching of terminating polycaprolactone by phenyl isocyanate in Winckler's molding compound in order to increase the rate of self-crosslinking in the presence of water (Pg 3 Par 35).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Winckler in view of Tikart et al (US 2002/0082350). Winckler teaches everything previously mentioned above in the 102(e) rejection. Winckler, however, does not teach linking agent that is reactive monomer selected from a styrene, a methyl methacrylate or a peroxide. Nevertheless, Tikart teaches using styrene as a cross-linking agent (Pg 1 Par 14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Tikart's teaching of using styrene as a cross-linking agent in

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Winckler's molding compound in order to enhance the thermal and electrical properties of the resin (Pg 1 Par 14).

### **Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang W. An whose telephone number is (571) 272-1997. The examiner can normally be reached on Mon-Fri 7 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sang W An  
Patent Examiner  
Art Unit 1732  
December 13, 2005



**MICHAEL P. COLAIANNI**  
**SUPERVISORY PATENT EXAMINER**